

We Claim:

1. In a computer readable medium, data output server software, comprising:
 - software for receiving at a server a document object corresponding to output content managed with an information apparatus;
 - software for receiving at the server an output device object with one or more attributes corresponding to an output device for rendering the output content, the server being distinct from the information apparatus and the output device;
 - software for generating output data employing at least partly the document object and the output device object, the output data relating to the output content for rendering at the output device; and
 - software for transmitting the output data for rendering of the output content at the output device.
2. The medium of claim 1 in which the transmitting of the output data includes transmitting the output data to the information apparatus for delivering the output data to the output device.
3. The medium of claim 1 in which the transmitting of the output data includes transmitting directly to the output device via a network.
4. The medium of claim 1 in which the transmitting of the output data employs a wireless network.
5. The medium of claim 1 in which the receiving of the document object includes wireless transmission.
6. The medium of claim 1 in which the output data includes device dependent data.
7. The medium of claim 1 in which the output data comprises one or more of a page description language, a markup language, a file format, an image format, a graphics format, an audio file, and a video file.
8. The medium of claim 1 in which the generating of the output data comprises at least a partial raster image processing operation on the output content.
9. The medium of claim 8 in which the image processing operation includes one or more of an interpretation operation, a conversion operation, a rasterization operation, a scaling operation, a segmentation operation, color space transform

operation, an image enhancement operation, a color correction operation, a half-toning operation, a compression operation, and an encryption operation.

10. The medium of claim 1 further comprising software for obtaining one or more output device attributes corresponding to the output device from a network node other than the information apparatus, with the one or more output device attributes not being available in the output device object.

11. The medium of claim 1 further comprising software for obtaining a digital document corresponding to the document object from a network node other than the information apparatus.

12. The medium of claim 1 further comprising software for receiving a job object with one or more attributes characterizing the rendering of the output content.

13. The medium of claim 12 in which the job object includes an output preferences attribute characterizing one or more output preferences including one or more of output quality, layout, number of output copies, number of windows per page, color or grayscale, and output size.

14. The medium of claim 12 in which the job object includes an identification attribute characterizing one or more identification features including one or more of a security setting, authentication, security information, payment information, subscription information, and user identification.

15. The medium of claim 12 in which the job object includes a job attribute characterizing one or more job features including one or more of a job priority or quality of service feature, job status information indicating status of the output job, a job instruction feature indicating one or more of job queuing, cancellation, execution, and output priority.

16. The medium of claim 1 further comprising software for managing communication with the information apparatus.

17. The medium of claim 1 further comprising software for invoking a separate application for interpreting or processing the digital document obtained and generating the output data.

18. The medium of claim 17 in which the separate application runs on the application server.

19. The medium of claim 17 in which the separate application runs at a network nodes other than the application server.
20. The medium of claim 17 in which the separate application includes at least part of a device driver.
21. The medium of claim 1 further comprising software for providing interaction between the data output server software and one or more databases that store profiles of subscribers to an output service supported by the data output server software.
22. The medium of claim 1 in which the document object includes the output content.
23. The medium of claim 1 in which the document object includes a pointer or reference to the output content.
24. The medium of claim 1 in which the output content is stored on a device other than the information apparatus.
25. The medium of claim 1 in which the document object includes one or more document instruction attributes that include instructions for one or more of viewing, obtaining, opening, interpreting, encoding, decoding, converting, compressing, decompressing, rasterizing, authenticating, encrypting, decrypting, or manipulating the output content.
26. The medium of claim 1 in which the document object includes software code.
27. The medium of claim 1 in which the document object includes a reference or pointer to another object.
28. The medium of claim 1 in which the output device object includes an output device identification attribute that includes one or more of an output device brand indication, a model indication, an identification number indication, an output device type indication, and a network address indication.
29. The medium of claim 1 in which the output device object includes an output device services attribute that includes one or more of a color or grayscale output indication, a laser or inkjet output indication, a duplex indication, an output quality indication, and a price per page indication.

30. The medium of claim 1 in which the output device object includes an output device language attribute that indicates one or more output data languages supported by the output device.
31. The medium of claim 1 in which the output device object includes an output data format attribute that indicates one or more output data formats supported by the output device.
32. The medium of claim 1 in which the output device object includes a payment information attribute that indicates payment information on one or more output services provided by the output device.
33. The medium of claim 1 in which the output device object includes a security attribute that indicates one or more security or authentication requirements supported by the output device.
34. A data output software system in a computing device, comprising:
- means for receiving at a computing device a document object corresponding to output content managed with an information apparatus;
- means for receiving at the computing device at least part of an output device object with one or more attributes corresponding to an output device for rendering the output content, the computing device being distinct from the information apparatus and the output device;
- means for generating an output data employing at least partly the document object and the output device object, the output data relating to the output content for rendering at the output device; and
- means for transmitting the output data for rendering of the output content at the output device.
35. The system of claim 34 in which the transmitting of the output data includes transmitting the output data to the information apparatus for delivering the output data to the output device.
36. The system of claim 34 in which the transmitting of the output data includes a wireless network.
37. The system of claim 34 in which the transmitting of the output data includes transmitting directly to the output device via a network.

38. The system of claim 34 further comprising means for obtaining a digital document corresponding to the document object from a network node other than the information apparatus.

39. The system of claim 38 in which the digital document is included in a file server.

40. The system of claim 34 further comprising means for obtaining one or more output device attributes corresponding to the output device and not included in the output device object, the one or more output device attributes being obtained from a network node other than the information apparatus.

41. The system of claim 34 further comprising means for receiving a job object with one or more attributes characterizing the rendering of the output content.

42. The system of claim 41 in which the job object is obtained selectively if information corresponding to the one or more attributes characterizing the rendering of the output content is not included in the document object or the output device object.

43. The system of claim 41 in which the job object is obtained in response to a query sent to the information apparatus from the server.

44. The system of claim 41 in which the job object is obtained as default information stored at the computing device.

45. The system of claim 34 further comprising means for managing communication with the information apparatus.

46. The system of claim 34 further comprising means for invoking a separate application for interpreting or processing the digital document obtained and generating the output data.

47. The system of claim 46 in which the separate application runs on an application server.

48. The system of claim 46 in which the separate application runs at a network nodes other than the computing device.

49. The system of claim 46 in which the separate application includes at least part of a raster image processor.

50. The system of claim 46 in which the separate application includes at least

part of a device driver.

51. The system of claim 34 further comprising means for providing interaction between the computing device and one or more databases that store profiles of subscribers to an output service supported by the data output computing device software.

52. The system of claim 34 in which the output device includes a printer.

53. The system of claim 34 in which the information apparatus includes a portable computing device.

54. The system of claim 34 in which the computing device includes a server.

55. A data output server software system in a computing device, comprising:
means for receiving at a server at least part of a document object
corresponding to output content managed with an information apparatus;

means for receiving at the server at least an indication of an output device for rendering the output content, the server being distinct from the information apparatus and the output device;

means for generating an output data employing at least partly the document object and the output device indication, the output data relating to the output content for rendering at the output device; and

means for transmitting the output data to the information apparatus for delivering the output data to the output device for rendering.